

UNITED STATES PATENT APPLICATION

For

STIMULATION APPARATUS

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BACKGROUND OF THE INVENTION

[0001] *1. Field of the Invention:* The present invention is in the field of apparatuses for stimulating humans, primarily sexually stimulating them.

[0002] *2. General Background and State of the Art:* Sexual devices can fall into many different categories, depending on the criteria for the categories. For example, some sexual devices are mere novelties with little practical use. They may be given as joking gifts. A second category includes relatively simple devices used to enhance or change the sexual experience. They may be used by persons seeking to stimulate themselves without another person, or they may be used with another person. They have gained popularity as concerns for sexually transmitted diseases (especially HIV) has increased. Others without sexual partners use them as a substitute for the partner. Many of these devices are battery operated and vibrate. Most of these replicate a human penis or vagina. Contact with the device as it vibrates stimulates the user. The user or his or her partner generates any movement of the device during use.

[0003] A third category includes more complex or stand-alone devices that can move relative to the user and vibrate simultaneously. Because they tend to be larger and heavier than battery operated device, the user does not have to hold them. Therefore, the devices have the advantage of freeing the user's arms and hands.

INVENTION SUMMARY

[0004] The stimulation device of the present invention has a housing that rests on a usually horizontal surface such as the floor, table or bed. A motor mounts in the housing. As the motor rotates, it drives a linkage which reciprocates a projecting member. The projecting member extends through a slot in the housing. A frame in the housing that mounts the motor allows the reciprocating member to pivot from a vertical or near vertical orientation to a horizontal or near horizontal orientation. The slot through which the projecting member extends is long enough to permit the projecting member to move between its positions. Therefore, one can position the projecting member in a position and orientation to contact or enter the user's particular body part.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] FIG. 1 is a perspective view of an exemplary embodiment of the present invention.

[0006] Figs. 2 and 3 are side views, partially cut away, of an exemplary embodiment of the present invention. In Fig. 2, the projecting member is vertical, and it is near horizontal in Fig. 3.

[0007] FIG. 4 is a cross-sectional view showing the internal parts of an exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0008] The stimulation device of the present invention comprises a housing 10. The housing sits on base 12 (Figs 2 and 3). The base may have short legs, rubberized pads or some other means for securing the housing to the surface on which it sits such as the floor, a table, a bed or a chair. The drawing show none. The base is square or rectangular in the exemplary embodiment, but other shapes are possible.

[0009] Sidewalls 14 and 16 (wall 16 is visible only in Fig. 4) and back wall 18 extend upward from base 12. A curved front/top wall 20 extends from the top of back wall 18 to the front of base 12 between sidewalls 14 and 16. Thus, base 12, sidewalls 14 and 16, back wall 18 and front/top wall 20 form enclosed housing 10. The exemplary embodiment of Fig 1 also shows an optional flange 22 extending outward from sidewall 14. Another flange would extend from side wall 16. These flanges add width and stability to the device.

[0010] The walls that form the housing may be metal, plastic or some other material. Material and fabrication costs, durability, weight and aesthetics are the main factors affecting the choice of materials.

[0011] The curved front/top wall 20, which curves from front to back, may be flat from side to side. In the exemplary embodiment, the front/top wall is stepped. That is, outer strips 32 and 34 are raised above inner strips 36 and 38. Figure 1 shows edge 40 between strips 34 and 38. The pattern could be reversed with the inner strips higher than

the outer strips. The strips have constant widths in the exemplary embodiment, but they could taper or be curved.

[0012] The inside edges of strips 36 and 38 are spaced apart and form a groove 50 (Figs. 1 and 4). Projecting member 60 projects out of the groove from inside housing 10. Flexible material 52 may cover the groove to block a user from sticking a finger or hand into the housing. The projecting member pivots from one end of the groove to the other as explained below. The material may move with the projecting member. If so, the material should be long enough that part of it always covers the groove. Flexible materials and construction similar to a roll-top desk could be used. Alternatively, the material may be resilient and stationary with a center groove. As the projecting member reciprocates and moves along groove 50, it pushes the flexible material apart sufficiently to permit the projecting member to move.

[0013] Projecting member 60 reciprocates. In the exemplary embodiment, an electric motor 90 mounts on a bracket 92 inside frame 64 (Fig. 4). The motor preferably has a gearbox attached to its output to decrease the rotational velocity of output shaft 94. Many different motors and gear combinations can be used for the proper speed and power. The frame may be metal, plastic or any other suitable material. It can form an enclosure for motor 90 and the parts that the motor operates, or the frame can comprise sufficient braces for required support of the parts.

[0014] Two shafts 70 and 72 (Fig. 4) are fixed to sidewalls 66 and 68 of frame 64 and shafts extend through sidewalls 14 and 16 of housing 10 in the exemplary embodiment. Top wall 78 closes the top of the frame. The top wall has an opening 62 through which projecting member 60 extends. The top wall may be omitted, or it may be a brace to hold the frame together. The top wall also could be curved. Accordingly, depending on the size and shape of the top wall, it may replace any flexible material 52 that blocks access to the inside of the housing or the frame.

[0015] Optional handles 74 and 76 attach to outer ends of shafts 70 and 72. Rotating those handles pivots the frame about the axis of the shafts. Thus, the frame and parts attached to the frame pivot with respect to housing 10. The pivoting changes the orientation of projecting member 60. Note that in the exemplary embodiment, the axes of

shaft 70 and 72 are aligned with the axis of motor shaft 94. Thus, pivoting frame 64 about its axis (through shafts 70 and 72) only rotates the motor. The motor does not move horizontally or vertically. If the curvature of the front/top wall 20 is circular, then the projecting member maintains the same projection out of slot 50 irrespective of its orientation. Avoiding small changes in the nominal distance that projecting member extends out of its slot may not be important, however. If so, the axis of motor shaft 94 could be spaced from the axes of shafts 70 and 72. In addition, the curved surface of front/top wall 20 may not be circular, which would change how far the projecting member extends from its slot at different orientations.

[0016] Each sidewall 66 and 68 of the frame may have an optional detent 82 or 86 that biases outward (Fig. 4). The detents engage depressions or holes 84 and 88 in housing sidewalls 14 and 16. The arrangement holds the frame's position relative to the housing, which maintains the orientation of projecting member 60. Other means are available to secure the frame's position. For example, handles 74 and 76 could be threaded to shafts 70 and 72 such that rotating the handles could cause them to frictionally engage the housing's sidewalls 14 and 16. Tightening the handles could also cause the sidewalls of the frame to be pulled toward the housing sidewalls such that washers (not shown) on shaft 70 and 72 would clamp against each other to limit rotation of the frame relative to the housing. Other parts of the frame also could engage other parts of the housing. Moreover, if material 52 in groove 50 is resilient and stationary with a center groove, the material's resiliency may be sufficient to hold projecting member 60 to prevent easy movement of the frame relative to the housing.

[0017] An electric cord (not shown) extends from outside the housing through one of the housing walls and connects through a fuse to a switch or controller (not shown). The switch or controller electrically connects to the motor and controls whether the motor operates. A controller also may allow adjustments in the motor's speed. As discussed below, the controller also may regulate other available functions for the projecting member.

[0018] Crank arm 94 connects to rotating output shaft 92 of motor 90 (Figs 2-4). The crank arm is part of a linkage that converts rotation of the motor's output shaft into reciprocation of projecting member 60. Crank arm rotation drives pin 98 at the end of the

crank arm. Pin 98 mounts in slot 100 of crosshead assembly 102 (Figs. 2 and 3). The slot may extend through the crosshead assembly, or the slot may extend into the crosshead assembly deep enough to retain the pin. The crosshead assembly attaches to proximal end 110 of rear portion 112 of projecting member 60. In the exemplary embodiment, the projecting member does not pivot with respect to crosshead assembly 102. Guide rails 104 and 106, which attach to the crosshead assembly, extend through bushings on brace _____. The brace is part of the frame. The guide rails prevent the crosshead assembly from pivoting. Thus, the guide rails can reciprocate through the bushings. That allows the crosshead assembly to reciprocate. Alternatively, the guide rails could be fixed to the brace and extend through bushings on the crosshead assembly. That arrangement also permits reciprocation of the crosshead assembly.

[0019] Therefore, when motor 90 acting through the motor gears rotates motor shaft 94, crank arm 96 revolves with shaft rotation. This movement cause pin 98 to move laterally along the slot 100 of crosshead assembly 102. Because the slot is straight but pin 98 moves circularly, the crosshead assembly reciprocates. Projecting member 60, which attaches to the crosshead assembly also reciprocates relative to slot 50 (Fig. 1).

[0020] Projecting member 60 is preferably hollow. Distal portion 114 is smooth, non-corrosive material such as plastic. The surface is cylindrical in the exemplary embodiment, but it may be ribbed or have other shapes. Because the distal portion will contact body parts, it should clean easily. Rear end 112 of the projecting member may be formed integrally with the distal portion, or the two parts may be attached together permanently or by a screw or bayonet fitting. Allowing the distal portion to separate from the rear portion allows the user to remove the distal portion for cleaning. In addition, the arrangement allows for different distal portions having different sizes and shapes and different functions.

[0021] Cap 116 on annular rib 118 closes the top of projecting member 60 in the exemplary embodiment. Thus, distal portion 116 of the projecting member resembles a penis. The user inserts the projecting member into a body orifice where it reciprocates. Alternatively, the distal portion could be open at its top so that the hollow inside would receive a body part.

[0022] Having projecting member 60 vibrate or perform other functions in addition to the reciprocation may be desirable. Therefore, coupling 130 attaches to the proximal end 110 of the projecting member. The coupling can be mounted elsewhere. The coupling can receive various auxiliary apparatuses. For example, an eccentric motor (not shown) can attach to the coupling for vibrating the projecting member. The eccentric motor can be powered by a battery or from house current from the power cord. Though batteries can power the entire apparatus, motor 90 likely will consume too much power for a battery-operated device to run for any substantial length of time.

[0023] A heater also may attach to coupling 130 for heating projecting member 60. A pump is another device that can affect the projecting member. A pump could force liquids or air through and out an opening in the top of the projecting member. A pump also could supply suction to the end of the projecting member. Devices cooperating with the projecting member may perform multiple functions simultaneously.

[0024] A controller 132 (shown schematically) electrically connects to the power cord and through wires 134 and 136 to motor 90 and the auxiliary device at coupling 130. Switches (not shown), which are accessible to the user, control the controller to control the operation of motor 90 and any auxiliary device. Controlling the motor can start and change the speed of reciprocation of projecting member 60. Similarly, the user can control the auxiliary device by starting the eccentric motor for vibrations or changing the frequency or amplitude of the vibrations.

[0025] Handle 140 having cross piece 142 mounted on arms 144 and 146 projects out of the top of housing 10 (Fig. 1). The handle may be fixed, but the arms of the exemplary embodiment can slide into openings in the top wall similar to the way handles of wheeled luggage work. The handle is in its open position in Fig. 1 and allows a user to carry the device easily. So that the handle does not project above the surface of front/top wall 20 when the handle is retracted, that wall has indented ledge 148 that is generally indented enough to receive cross piece 142.

[0026] A user carries the entire device to a desired location such as a table, chair, bed or the floor. He or she then positions projecting member 60 to a desired orientation to

stimulate a body part. The user then uses the controller to turn the device on or off and to control reciprocation of the projecting member and any auxiliary device.

[0027] Though the discussion may infer that the device of the present invention is used by one person, couples can use it as an enhancement to other activities.

[0028] The specification describes particular embodiments of the present invention. Those of ordinary skill can devise variations of the present invention without departing from the inventive concept.